What is claimed is:

1. A flash tank for use in an economizer circuit, the flash tank comprising:

a housing having a closed end portion and a substantially cylindrical shape with substantially cylindrical sidewalls, the housing comprising:

an upper shell section having a substantially cylindrical sidewall and a closed end portion;

a middle shell section disposed adjacent to the upper shell section and having a substantially cylindrical sidewall; and

a lower shell section disposed adjacent the middle section and having a substantially cylindrical sidewall and a closed end portion, each shell section having an opening for connection to the adjacent shell section;

a refrigerant inlet located in the sidewall of the upper shell section;

a substantially cylindrical baffle having a sidewall disposed at least partially in the upper shell section and substantially parallel to the sidewall of the upper section, the baffle sidewall being configured to direct the flow of high-pressure refrigerant introduced into the housing through the refrigerant inlet;

a gas outlet disposed in the closed end portion of the upper shell section;

a second baffle located on the interior side of the sidewall of the middle section; and

a liquid refrigerant outlet disposed in the sidewall of the lower shell section for conveying liquid refrigerant from the housing to another component in a refrigeration system.

2. The flash tank of claim 1, wherein the cylindrical baffle has a first end connected an interior surface of the closed end portion of the upper shell section, and a second end opposite the first end having an opening for communicably connecting the gas outlet to the middle shell section.

3. The flash tank of claim 1, wherein the cylindrical baffle is disposed substantially concentric to the sidewall of the upper shell section.

4. The flash tank of claim 1, wherein the length of the sidewall of the cylindrical baffle is at least 20% but less than 100% of a horizontal cross sectional inner diameter of the cylindrical baffle.

5. The flash tank of claim 1, wherein the refrigerant inlet includes a substantially cylindrical aperture having a longitudinal axis that is substantially perpendicular to the sidewall of the cylindrical baffle.

6. The flash tank of claim 1, wherein the refrigeration inlet and the liquid refrigerant outlet are substantially circumferentially aligned on the sidewall of the housing.

7. The flash tank of claim 1, wherein the second baffle is comprised of a substantially flat piece of non-porous material.

8. The flash tank of claim 1, wherein the second baffle includes a first end and an opposite second end, and wherein the first end is attached to the interior surface of the sidewall of the housing at a point above a preselected maximum liquid level.

9. The flash tank of claim 8, wherein the first end of the second baffle is shaped so as to permit continuous contact with the interior surface of the sidewall of the housing.

10. The flash tank of claim 8, wherein the first end of the second baffle is of sufficient width so as to span between about 50 and about 150 degrees around the circumference of the interior surface of the sidewall.

11. The flash tank of claim 8, wherein the second baffle is substantially symmetric along a central axis connecting the midpoints of the first end and the second end of the second baffle.

12. The flash tank of claim 11, wherein the central axis is substantially circumferentially aligned with the refrigeration inlet and the liquid refrigerant outlet on the sidewall of the housing.

13. The flash tank of claim 8, wherein the opposite second end of the second baffle protrudes substantially perpendicularly from the sidewall into an interior cavity of the housing.

14. The flash tank of claim 8, wherein the length of the second baffle along the central axis is between 20% and 50% of the largest horizontal cross-sectional diameter of the housing sidewall to which the first end of the second baffle is attached.

15. The flash tank of claim 8, wherein the ratio of the width of the first end to the width of the second end is between about 2:1 and about 4:1.

16. The flash tank of claim 8, wherein the width of the second end is less than the width of the first end, and wherein the ends are connected by substantially linear side edges.

17. The flash tank of claim 8, wherein the second end is substantially linear and is aligned substantially perpendicular to the central axis.

18. The flash tank of claim 8, wherein the ratio of the width of the second end to the length of the second baffle along the central axis is between 0.5:1 and 3:1.

19. The flash tank of claim 8, wherein the liquid level control apparatus mounted through the sidewall has a substantially cylindrical interior having a substantially uniform inner diameter.

20. The flash tank of claim 19, wherein the inner diameter of the liquid level control apparatus is at least 0.5 inches.

21. A method of separating liquid refrigerant from refrigerant gas in an economizer refrigeration system, the method comprising the steps of:

providing a refrigeration system equipped with an economizer circuit, the economizer circuit including a flash tank having housing comprising a refrigerant inlet, a refrigerant gas outlet, a liquid refrigerant outlet, a cylindrical baffle, and a second baffle;

collecting liquid refrigerant in a condenser of the refrigeration system;

passing the liquid refrigerant from the condenser to a liquid refrigerant line of the economizer circuit, the refrigerant line having an expansion device therein and communicably connected to the refrigerant inlet of a flash tank;

receiving expanding refrigerant from the liquid line into the refrigerant inlet;

directing the flow of received refrigerant against the cylindrical baffle of the flash tank, the cylindrical baffle disposed substantially adjacent the refrigerant inlet;

separating the gas phase of the liquid refrigerant from the liquid phase of the refrigerant; and

preventing re-entrainment of refrigerant gas by providing a second baffle located on the sidewall of the housing at a point above a preselected maximum liquid level.

22. The method of claim 21, further comprised of the step of maintaining a constant level of refrigerant liquid in the flash tank by conveying the refrigerant gas through the interior of the cylindrical baffle to the gas outlet, and by conveying refrigerant liquid to a main refrigerant line through the liquid refrigerant outlet.

23. A refrigeration system comprising a compressor, a condenser, and an evaporator interconnected to form a closed refrigeration circuit, the closed refrigeration circuit further comprising an economizer circuit including a flash tank, the flash tank comprising:

a housing having a closed end portion and a substantially cylindrical shape with substantially cylindrical sidewalls, the housing comprising:

an upper shell section having a substantially cylindrical sidewall and a closed end portion;

a middle shell section disposed adjacent to the upper shell section and having a substantially cylindrical sidewall; and

a lower shell section disposed adjacent the middle section and having a substantially cylindrical sidewall and a closed end portion, each shell section having an opening for connection to the adjacent shell section;

a refrigerant inlet located in the sidewall of the upper shell section;

a substantially cylindrical baffle having a sidewall disposed at least partially in the upper shell section and substantially parallel to the sidewall of the upper section, the baffle sidewall being configured to direct the flow of high-pressure refrigerant introduced into the housing through the refrigeration inlet;

a gas outlet disposed in the closed end portion of the upper shell section;

a second baffle located on the interior side of the sidewall of the middle section; and

a liquid refrigerant outlet disposed in the sidewall of the lower shell section for conveying liquid refrigerant from the housing to another component in a refrigeration system.

24. The refrigeration system of claim 25, wherein the refrigerant inlet and the liquid refrigerant outlet are substantially circumferentially aligned on the sidewall of the housing.

25. The refrigeration system of claim 25, wherein the second baffle is comprised of a substantially flat piece of non-porous material.

26. The refrigeration system of claim 25, wherein the second baffle includes a first end and an opposite second end, and wherein the first end is attached to the interior surface of the sidewall of the housing at a point above a preselected maximum liquid level.

27. The flash tank of claim 26, wherein the first end of the second baffle is of sufficient width so as to span between about 50 and about 150 degrees around the circumference of the interior surface of the sidewall.